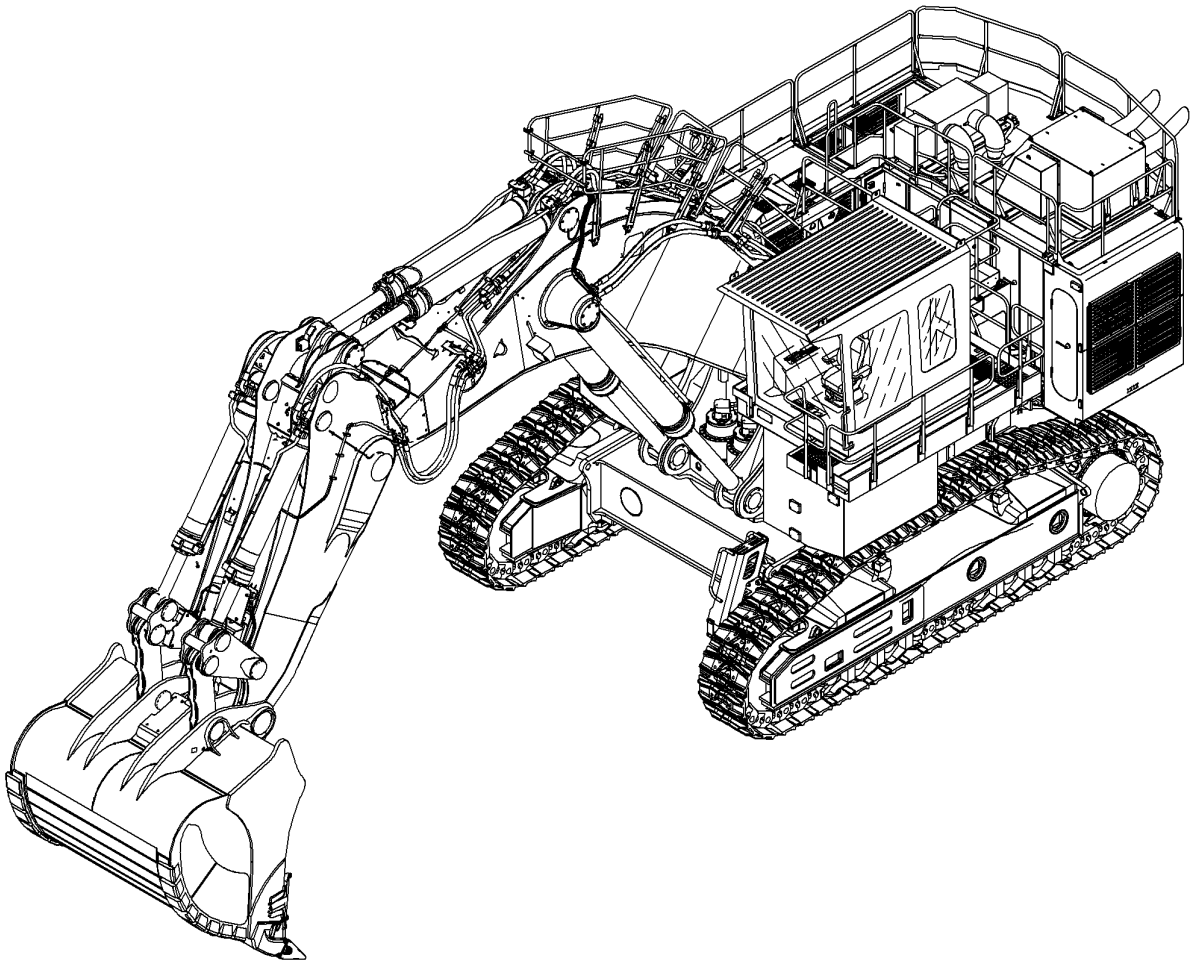


## Assembly Manual

Hydraulic excavator  
R9350  
Backhoe attachment



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- Maintain a safe distance from electrical aerial lines. Do not allow the attachment to come near cables when working near electrical aerial lines. Risk of fatality! Inform yourself about required safety distances.
- The following actions must be carried out in the event of any transfer of electricity:
  - do not move the machine or its attachment,
  - do not leave the driver's cab,
  - **warn any personnel in the vicinity not to come close to the excavator and not to touch it,**
  - instruct or initiate that someone turns off the voltage.
  - move the machine, if possible, from the danger zone to a sufficient distance,
  - Do not leave the machine until you are absolutely sure that voltage in the line, which had been touched or damaged, has been turned off!
- Before moving the machine, always ensure that any attachments are safely secured.
- When driving onto public roads, paths and squares, observe current traffic regulations and if necessary, ensure that the machine has been made safe as per regulations beforehand.
- Always turn on the lights in conditions of poor visibility or darkness.
- Do not permit any passengers in the machine.
- Only work when seated properly and with the safety belt securely fastened (if available).
- Report all function faults and ensure that all necessary repairs are carried out immediately.
- Assure yourself that no one is endangered when you start the machine moving.
- Before you start working, test the brake system in accordance with the regulations given in the operating instructions.
- Never leave the driver's seat while the machine is moving.
- Never leave the machine unattended while the engine is running.
- The machine must be positioned, moved and operated in such a way that it is stable and that there is no danger of overturning. Only known loads may be moved with the attachment; this applies particularly when using the grab.
- Position the upper structure in the longitudinal direction when moving and hold the load as close to the ground as possible.  
EXCEPTION: excavators used for loading and unloading, see the part "Safe use when loading and unloading (particularly when loading and unloading wood)" on page 12.
- Adjust your driving speed to suit site conditions.
- Avoid any working movements which may tip the machine. Should the machine start to tip or slide sideways, however, turn the upper structure to face downhill and lower the attachment at the same time.
- As far as possible, work downhill or uphill and not side on to the slope.
- Drive safely on stony, slippery or inclined ground
- Only drive downhill at the permitted speed or you could lose control of the machine.
- Always shift down to a lower running step before a slope. When doing this, the diesel engine must run at maximal speed and the speed may only be reduced using the foot pedals.
- Load an occupied truck only if all safety requirements are fulfilled, notably in order to protect the truck operator.
- For demolition work, digging and crane operations etc., always use protective devices specifically designed for the purpose.
- For terrain which is difficult to gain an overview of and whenever necessary, ask for the assistance of a spotter. Only permit one person to give you signals.
- Authorize only experienced people to attach load and to give indications to the machine operator. This people must be in the operator's sight or in radio contact with him.
- Depending on the attachment combination, there is a risk of collision between the work tool and the machine (uppercarriage and undercarriage). The greatest degree of care must be taken to avoid damage.
- Depending on the attachment combination, there is a risk of collision between the work tool and the cab, the cab protection or the boom cylinders. The greatest degree of care must be taken to avoid damage when the hoe teeth come within this area.

- Ensure that process materials and replacement parts are disposed of in a safe and environmentally acceptable manner.
- Take care when handling hot process materials (Risk of burning and scalding).

### Repair work

- Do not attempt to lift heavy parts. Use devices which are suitable for this purpose and which have sufficient load capacity. When replacing single parts and larger subassemblies, carefully secure them on lifting devices so that they do not present a risk. Only use suitable and correctly functioning lifting devices and load take-up devices with adequate load capacity. Do not stand or work under swinging loads.
- Do not use lifting devices which are damaged or do not have sufficient load carrying capacity. Wear work gloves when working with wire cables.
- Authorize only experienced people to attach load and to give indications to the crane operator. This people must be in the operator's sight or in radio contact with him.
- When working above body height, use safe climbing devices and working platforms which are appropriate for the job. Do not use machine parts as climbing devices if they are not designed for this purpose. When working at height, wear a harness to prevent falling. For further information, see section "Maintenance anchor points" or contact Liebherr customer service.
- Ensure that all grips, steps, rails, platforms and ladders are free of dirt, snow and ice.
- Pneumatic cylinders do not have to be used as handles. Open doors and covers carefully, so that pneumatic cylinders do not hit their stops, because this could cause mechanical damages.
- Make sure the equipment on which you will operate is securely supported before working (e.g. replacing teeth). Prevent metal touching metal when doing this.
- For safety reasons, never open and remove a track chain unless having previously totally released the pretension of the chain tensioning unit.
- Never lay under the machine if it is raised with work equipment and has not been securely supported with appropriate supports.
- Always jack the machine up in such a way that any weight displacement does not jeopardize stability and prevent metal touching metal while doing this.
- Work on the suspension, brake and steering systems may only be carried out by trained specialist personnel.
- If the machine has to be repaired on a slope, secure the crawler with chocks and connect the upper structure to the chassis using stop bolts.
- Only personnel with special training and experience may work on hydraulic equipment.
- When searching for leakage, wear protective gloves. A fine jet of liquid under pressure can penetrate the skin.
- Do not unscrew any lines or connections before you have set aside the equipment, switched off the engine and depressurized the hydraulic system. After switching off the engine, with the start key in contact position and with the safety lever down into its lowest position, you must operate all pilot control devices (joystick and pedals) in all directions in order to reduce the actuating and dynamic pressures in the work circuits. You must then reduce the internal tank pressure as described in these operating instructions.

### Electrical system

- Check the electrical system regularly. Have all faults, such as loose connections, blown fuses and lamps and clogged or abraded cables rectified by personnel.
- Only use original fuses with approved current strength.
- For machines with electrical neutral and high tension leads:
  - switch the machine off immediately in the event of malfunctions in the power supply.

Supply for water, electricity on the assembly yard	yes	20 days
Site & safety induction courses for all the Seller's assembly staff	yes	20 days
Container#1 (for office)	1	20 days
Container#2 (for change house)	1	20 days
Container#3 (for std and special hand tools)	1	20 days
Supply to Container#1 for electricity, internet network, phone and fax	1	20 days
Phone, fax and internet network lines and subscription cost	1	20 days
Supply to the Seller's Containers#1&2 for electricity and potable water	1	20 days
Cost of water and electricity	1	20 days
Messing and accommodation for all the Seller's assembly staff	1	20 days
Portable toilets	1 or 2	20 days

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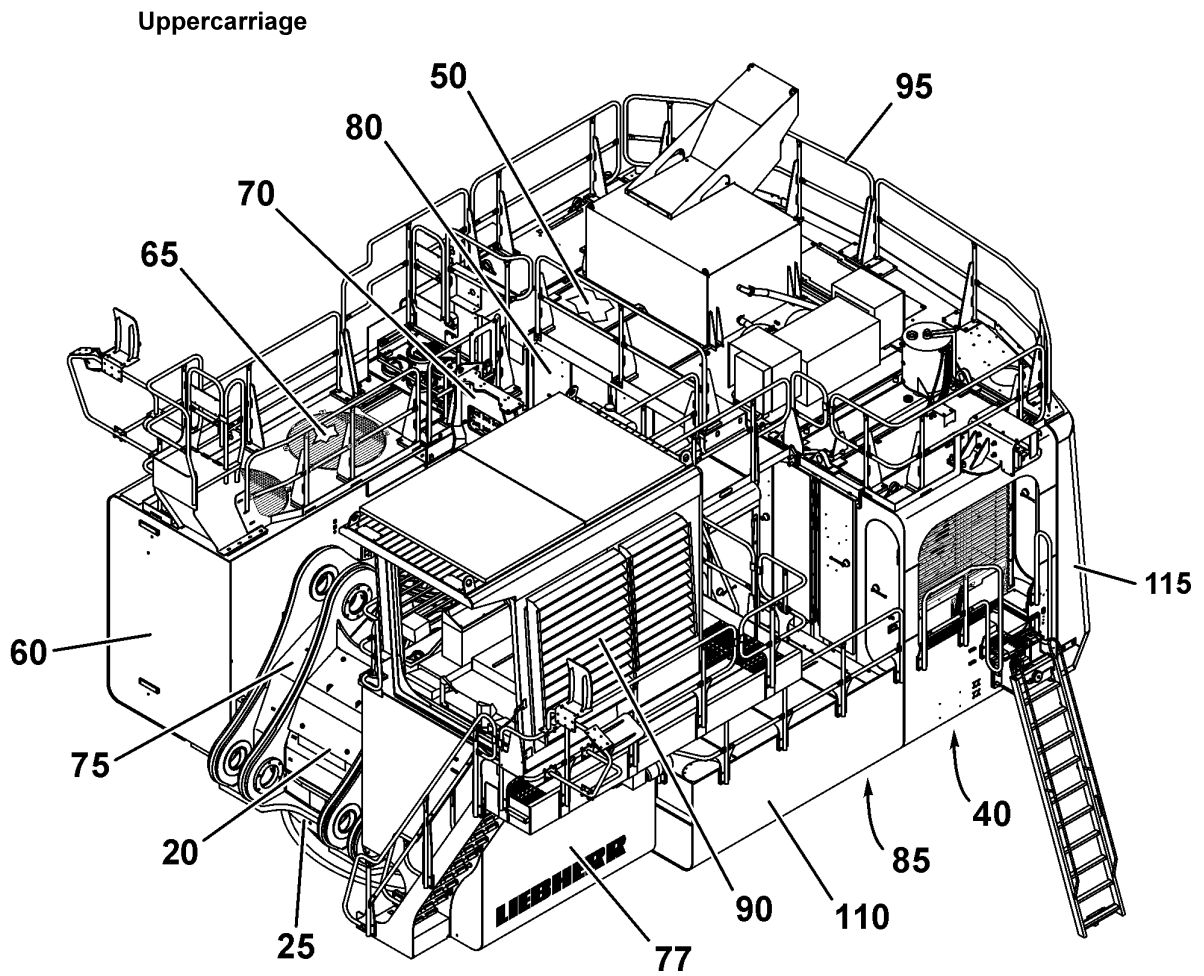

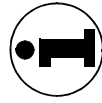


Fig. 4 Uppercarriage

- |    |                             |     |                            |
|----|-----------------------------|-----|----------------------------|
| 20 | Swing gear installation     | 77  | Cab elevation              |
| 25 | Swing ring installation     | 80  | Covering                   |
| 40 | Service trap                | 85  | Lower covering             |
| 50 | PowerPack                   | 90  | Cab                        |
| 60 | Hydraulic tank installation | 95  | Catwalk and handrail       |
| 65 | Oil radiator installation   | 110 | Fuel tank                  |
| 70 | Control valve installation  | 115 | Counterweight installation |
| 75 | Rotating deck               |     |                            |

## 6.2 Opening boxes and containers

Step	Work procedure	Hazards identified	Precautions to be taken	Illustrations	Tools	Check Off
2	<b>Opening boxes and containers</b>	Safety check-list	SWP 0.01 - R9350			<input type="checkbox"/>
2.1	All wooden boxes must be opened to check the contents and make the inventory according to the packing list.	<p>Pay attention when you open the boxes</p> <p>The elements inside the boxes may have moved during the transportation.</p> <p>Tipping hazard</p>	<p>Items from boxes must be dispatched according to the site layout</p> <p>Remove the top and the around of the boxes from the big elements and keep the support only</p> <p>For stability reason, make sure that the components are correctly blocked</p>			<input type="checkbox"/>

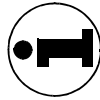


**Note!**

The LIEBHERR equipment is large and heavy. It is mandatory that all work must be done in a safe manner. If you are in doubt about a procedure, always check with your supervisor before proceeding.

### 6.4 Pre-assembly of the counterweight

Step	Work procedure	Hazards identified	Precautions to be taken	Illustrations	Tools	Check Off
4	<b>Pre-assembly of the counter-weight</b>	Safety check-list	SWP 0.01 - R9350			<input type="checkbox"/>
4.1	Install the light and the horn				Torque-wrench	<input type="checkbox"/>
4.2	Install the clamping profile (black foam) The clamping must only be installed if you keep the counter-weight straight				Glue	<input type="checkbox"/>
4.3	Clean the thread					<input type="checkbox"/>
4.4	<b>End of pre-assembly of the counterweight</b>					<input type="checkbox"/>



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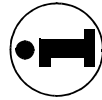
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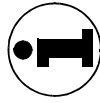
Step	Work procedure	Hazards identified	Precautions to be taken	Illustrations	Tools	Check Off
7.14	Install the light and do the wire connection					<input type="checkbox"/>
7.15	End of boom pre-assembly					<input type="checkbox"/>



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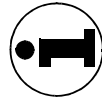
Step	Work procedure	Hazards identified	Precautions to be taken	Illustrations	Tools	Check Off
9	<b>Assembly of the Upper-carriage</b>	Safety check-list Lifting Uppercarriage lifting	SWP 0.01 - R9350 SWP 0.09 - R9350 SWP 0.13 - R9350 Check for lifting point in the operation manual Chapter 3.6.2 "Excavator lifting and lashing operations"			<input type="checkbox"/>
9.1	Remove tape from the swing ring and clean mating surface					<input type="checkbox"/>
9.2	Remove nuts from the threaded shaft of transportation surface					<input type="checkbox"/>



**Note!**

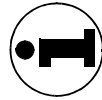
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Step	Work procedure	Hazards identified	Precautions to be taken	Illustrations	Tools	Check Off
11	Assembly of the fuel tank	Safety check-list Lifting	SWP 0.01 - R9350 SWP 0.09 - R9350			<input type="checkbox"/>
11.1	Clean the thread of the mounting bolts					<input type="checkbox"/>



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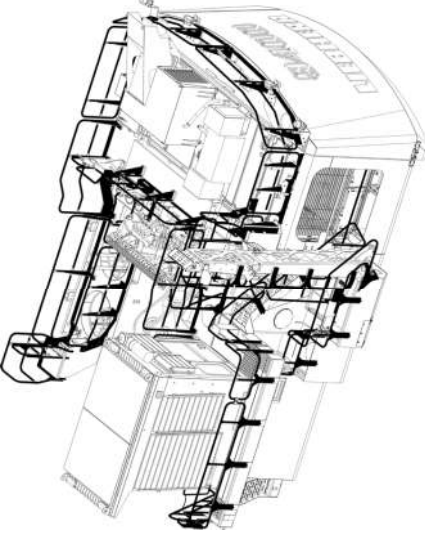
Step	Work procedure	Hazards identified	Precautions to be taken	Illustrations	Tools	Check Off
12.11	End of the Powerpack assembly					<input type="checkbox"/>

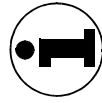


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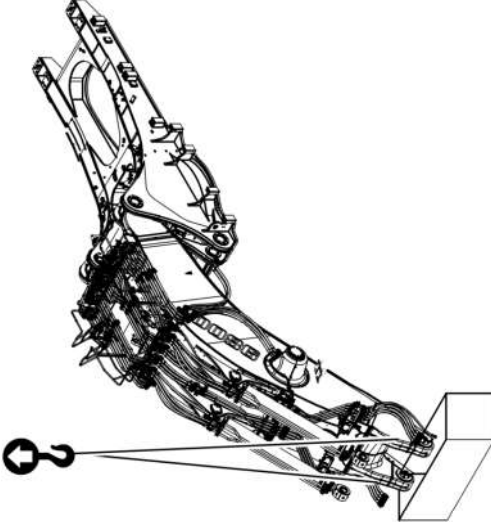
6.15 Assembly of the guard railing

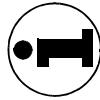
Step	Work procedure	Hazards identified	Precautions to be taken	Illustrations	Tools	Check Off
15	<b>Assembly of the guard railing</b>	Lifting	SWP 0.09 - R9350		Torque wrench	<input type="checkbox"/>
15.1	Refer to the packing list, for more information on the installation		Check the number of the tags on the handrail			<input type="checkbox"/>
15.2	Lift the handrails with crane					<input type="checkbox"/>
15.3	Install the handrails					<input type="checkbox"/>
15.4	Tighten the mounting bolts to the correct value				Torque wrench	<input type="checkbox"/>



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Step	Work procedure	Hazards identified	Precautions to be taken	Illustrations	Tools	Check Off
17.11	Remove slings at the back of the boom.					<input type="checkbox"/>
17.12	Keep the boom in position					<input type="checkbox"/>
17.13	<b>End of boom assembly</b>					<input type="checkbox"/>

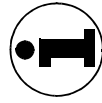


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Step	Work procedure	Hazards identified	Precautions to be taken	Illustrations	Tools	Check Off
18.16	End of the Stick assembly					<input type="checkbox"/>

### 6.19 Electrical and hydraulic connections

Step	Work procedure	Hazards identified	Precautions to be taken	Illustrations	Tools	Check Off
19	Electrical and Hydraulic connections	Safety check-list	SWP 0.01 - R9350			<input type="checkbox"/>
<b>Note:</b> As each components are factory pre-assembled, the length and the routing are pre-defined in order to help you to install the electrical and hydraulic connections						
19.1	Connect all hydraulic hoses If necessary, refer to the Service Manual chapter 21 «Schematics» for additional information	Hydraulic hoses	SWP 0.10 - R9350 Make sure that all hydraulic orifices are clean Make sure that the length and the routing of each flexible are adapted to each installation Make sure that no frictions exists between hoses and/or chassis.			<input type="checkbox"/>



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